

contaminated with the gas, would be particularly liable to febrile attacks. This, however, is not found to be the case.

"It appears that M. Ledoyen does not contemplate securing to himself by patent the exclusive right to sell his fluid, but claims from the government, such reward as may appear on investigation to be due to him, as the discoverer of a disinfecting agent of great importance to the health and welfare of mankind. A similar application was made to the French government, but the grant was refused."—*Pharm. Journ.*, August 1847. T. R. B.

ETHER INHALATION AS A MEANS OF ANNULING PAIN.

The introduction of the inhalation of ether as a means of annulling pain, is the most interesting and perhaps important event in the medical history of our time. We had hoped, in the present number of this Journal, to have been enabled to give a full account of the effects of this agent, so as to furnish our readers with the data for determining its exact effects, its precise value as a means of annihilating pain, and to discriminate the cases to which it is applicable. Unhappily the materials for this do not as yet exist. On every point connected with this subject, much diversity of opinion exists, and even reports of experiments are so far at variance, that it is impossible to entirely reconcile them. Under these circumstances, all that we can do is to chronicle the principal facts which have been brought to light, and leave our readers to draw such deductions as they may feel that these imperfect materials authorize.

§ 1. *Mode of Administering Ether, and Precautions to be observed.*

Various and complex forms of apparatus have been contrived for administering ether vapour, but it seems now well settled that a simple flask, containing flannel, or some porous material saturated with ether, and with a hole in the side to admit atmospheric air, and a simple mouth-piece; or a piece of sponge saturated with ether and held over the mouth and nose, answers perfectly well.

77. The following rules are given by Dr. Ranking to be observed in its exhibition:—

1st. The ether employed should be the purest washed sulphuric ether.

2d. The patient should be allowed to respire atmospheric air alone for a few moments if the apparatus is so formed as to allow of it; if not, the nose should not be closed until several respirations have been taken, and the patient continues to breathe without trepidation.

3d. The ether should not be turned on in a full jet at once, but the stopcock should be so regulated as gradually to accustom the bronchial tubes to the vapour.

At this time coughing is apt to ensue, especially if the ether be not perfectly pure; this symptom, however, soon subsides, or can be moderated by a regulation of the jet of the ether.

4th. Surgeons differ in opinion as to the exact point at which inhalation should be suspended; we believe that for surgical purposes, Mr. Robinson's test, as afforded by the state of the eye, will be a sufficiently good guide.

5th. In prolonged operations, it is necessary to alternate respiration of pure atmospheric air with that of ether vapour; this is accomplished by removing the clip from the nose, or still better, in those instruments which are so made, by shutting off the ether and turning on the air.

78. The precautions which seem requisite are thus stated by Dr. Ranking:—

1st. Never to exhibit the ether vapour without having previously auscultated the heart and lungs.

2d. Never to employ it in persons who have signs of obstructive disease of the heart to any amount, or of dilatation of its cavities, or whose heart is feeble, even though not disproportioned.

3d. Never to employ it in persons who have any considerable portion of a lung unfitted for respiration, as from hepatization, tubercular deposit, pleural effusion, &c.

4th. In persons with short necks, with tendency to cerebral congestion, its employment is not without risk; also (perhaps) in those with disposition to insanity or other recurrent disease of cerebral origin.

5th. No operation of consequence should be performed under the influence of ether without a preliminary "trial" exhibition.—*Half-Yearly Abstract.*

§ 2. Physiological Action of Ether.

The most valuable of the recent experiments which have been made with a view of determining the physiological action of ether, are the following:—

79. *Experiments illustrating the Effects produced by the Inhalation of Ether upon the lower Vertebrate Animals.*—By HOLMES COOTE, Esq., and THOMAS TAYLOR, Esq. (*Lancet*, June 19th, 1847.)

These experiments, eight in number, illustrate some of the principal phenomena which the respiration of air impregnated with the vapour of ether may produce upon the animal frame. A feeling of discomfort, indicated by a distressed look, glassy eye, and attempts to escape, is quickly followed by more rapid and more powerful contractions of the heart, by increased rapidity of circulation throughout the whole vascular system, by deeper and laborious, or by more frequent acts of inspiration, and an excited condition of the brain. Then the cerebral functions become oppressed; sensation and the power of motion become more and more impaired; the action of the limbs becomes irregular and wild, and the animal reeling and staggering from side to side, eventually falls down as if lifeless. But respiration still goes on; the capillary circulation is unusually active; and although the muscular system generally is in a state of relaxation, the involuntary muscles seem preternaturally excited; both the urine and the feces may be suddenly voided. This stage of complete insensibility is followed, after a time, by symptoms of congestion of the brain; the respiratory act becomes less frequent; the blood, of a dark blue colour, stagnates in the capillaries; the extremities feel cold; the lips are blue and livid; and if the animal be not speedily removed into pure air, respiration first stops—then the contractions of the heart become fainter and fainter—lastly, the peristaltic action of the intestinal tube ceases. Upon examining the bodies of those destroyed by the inhalation of ether, there is found great congestion of the vessels of the pia mater, and of the sinuses at the base of the brain; the vessels of the medulla oblongata and pons Varolii are especially turgid with dark-coloured blood; both sides of the heart are distended by fluid black blood. The air-sacs of a frog (exp. 1) were full of air; the lungs of the guinea-pig (exp. 6) were in a state of collapse.

The authors draw the following important practical inferences from their observations.

1. The vapour of ether, when inhaled continuously, and in considerable quantity, is capable of destroying life, by producing an accumulation of dark blood in the vessels at the base of the brain.

2. The commencement of this state is indicated by slow and laborious respiration—by failing pulse, cold extremities, and blue, livid lips.

3. The arterial blood is, under these circumstances, of the same dark colour as that contained in the veins.*

4. The slow circulation, or the stagnation, of such a fluid in the cerebral vessels may produce effects which the inspiration of pure air will be unable to rectify.

5. Great judgment, therefore, should be exercised in compelling patients struggling for pure air to inhale through the ether apparatus.

6. But a state of insensibility, produced by the proper influence of the ether, may be safely prolonged for a very considerable time, by permitting the occasional inhalation of pure air, and by re-administering the ether only when symptoms of consciousness are beginning to manifest themselves.

7. The involuntary muscles, so far from being in a state of relaxation, as are the voluntary muscles, seem to be preternaturally excited, and to act with increased power.

* During the performance of amputation of the forearm, upon a patient under the influence of ether, at St. Bartholomew's Hospital, in the month of March, it was observed that the blood, flowing from the radial, ulnar, and interosseous arteries, was of as dark a colour as that contained in the veins.

80. *Influence of Ether on Respiration.*—M. VILLE, in conjunction with M. BLANDIN, has instituted some experiments on the influence of ether on respiration, and the results show that in that state of complete insensibility where the sight seems lost, where the limbs have lost heat, and, often, the power of motion, respiration develops more carbonic acid than in the opposite condition, where the play of the organs can go on freely and naturally. In the progress of etherization, the carbonic acid thrown off during respiration always augments in quantity in proportion as sensibility becomes enfeebled, and, on the contrary, diminishes as sensibility returns and is re-established.

The following are some of the results of the experiments:—

Carbonic acid produced during natural respiration.	During the state of insensibility.	Ether contained in the air inhaled.	Duration of inhalation.
No. 1—2.41	4.84	6.70	2 min. 30 seconds.
2—3.05	4.38	2.17	2 min. 30 seconds.
3—2.79	3.11	12	4 min.
4—1.36	3.32	12.68	4 min.
5—2.04	4.42	14.11	2 min. 30 seconds.

—*Lancet*, July 10, 1847.

81. *Morbid Appearances.*—The morbid appearances which have been found after death, caused by ether in animals, are similar to those observed in asphyxia, namely, fluidity of the blood, its collection in the right side of the heart and large veins, and engorgement of the internal viscera. In the fatal case of the Royal Infirmary there was found double pneumonia, bronchitis, and secondary purulent deposits in the joints. In the case of Mr. Nunn, cerebral congestion, lungs engorged posteriorly, and uniform fluidity of the blood. In the case at Grantham there was no great congestion, but the blood was fluid throughout. The observations of Amussat and Lassaigne have shown that in every case the blood loses its power of coagulation, although, with the exception of the presence of a minute dose of ether, its chemical principles are unchanged.—*Monthly Journ. Med. Sci.*, April 1847.

Some further information regarding the physiological action of ether is furnished in the next section.

§ 3. *Employment of Inhalation of Ether in Surgical Practice.*

It is impossible to chronicle all the individual cases, so numerous are they, in which inhalation of ether has been successfully employed to annul pain in surgical practice. They embrace almost every operation in surgery; and what is most extraordinary is, that an agent so potent should have been administered in such numerous instances, and so few examples be recorded of injurious results. It may be useful, however, to show that it is not always effectual, and that sometimes very distressing consequences follow its use. This is the more important, because, from the tone of some journalists, we have reason to believe that many have been misled on this point.

The following case is well calculated to induce caution in its use:—

82. *Ill Effects of Ether.*—Mr. COPEMAN relates, in the *Provincial Medical and Surgical Journal* (February 10th), the following case, in which very distressing effects resulted from the inhalation of ether.

"The experimenter was a medical gentleman, who requested me to extract a tooth for him, provided he could make himself insensible to pain by means of ether. He breathed the vapour for several minutes without any apparent effect, but soon afterwards thrust the apparatus suddenly from him, exclaimed that he could bear it no longer, staggered about the room, and was assisted to a chair. His breathing became very difficult; his arms were stretched out; his fingers extended; and he was perfectly cataleptic. I would then have attempted to draw his tooth, but he showed some resistance, and his breathing was so exceedingly laboured, that it would have been almost impossible to perform that or any other operation. Each expiration was accompanied with a loud *Hah!* his eyelids were closed; his head was hot; pupils not altered; conjunctivæ much injected; pulse 120; and his appearance altogether was so distressing as to excite great alarm in the minds of the bystanders.

I applied cold to the head; gave some brandy and water, for his hands were cold; and admitted fresh air freely into the room. Soon the cataleptic symptoms disappeared, and were succeeded by severe hysteria, with about the same degree of consciousness as is usual in that disease. With some difficulty I led him to the outer door, when he exclaimed "Cover my chest," "cold, cold, cold." He was then removed to the sofa, when he was seized with severe cramp in the legs, the difficult breathing still continuing. I gave more brandy and water; applied hot flannels to the feet, and cold water to the head; admitted fresh air freely, and watched the progress of the case with no little anxiety; for these distressing symptoms continued for *more than an hour*, during which time I had to contend against the most fearful apprehensions of the mother, as well as to administer relief to a near relative who had voluntarily taken a poison, the effects of which I had not before witnessed, and the probable result of which I could not from experience determine. At last a few deep inspirations ushered in a state of semi-consciousness, the patient raised himself to a sitting posture, and looked about him with a vacant stare, the conjunctivæ being very red and suffused. He attempted to rise, but tottered like a drunken man, and suffered a degree of exhaustion and giddiness which lasted until he was taken to bed. He slept well, but next morning complained still of languor. I should mention, that while he was lying on the sofa I applied strong ammonia to his nose, without producing any visible effect, and he had afterwards no recollection of the circumstance.

"The description afterwards given by the patient of his sensations whilst under the influence of the ether, was as follows:—He felt nothing for several minutes, but on a sudden appeared to lose all muscular power. He seemed to take leave of the external world, but experienced a dreadful sensation of universal tremor, and yet a perfect fixedness of the limbs. He felt irresistibly disposed to lie down, and get his head upon the ground; was much distressed with a sensation of cold; also of tightness across the chest; and although he seemed to be aware that persons were talking to him, had no consciousness of what was really passing around him. He said his sensations were so dreadful that he would rather undergo any amount of pain than submit to the same again, which he could compare only to a state of utter helplessness and impending dissolution.

"The impression on my own mind was, that I would on no account willingly produce a similar train of symptoms; and that, if such were to be the *frequent* effects of the ether, there would be few who would wish to exchange for them the pain of a surgical operation.

"The apparatus employed was a glass jar, with openings at the top, into one of which was inverted a flexible tube for inhalation; and into the other a funnel, containing a piece of sponge, saturated with ether. About an ounce of ether, and several pieces of sponge, were in the jar. The patient was 23 years of age, spare, and of nervous temperament, with a brain very active and excitable. The time at which the inhalation was performed was soon after dinner; I presume, therefore, that neither was the constitution of the patient suited to the exhibition of ether, nor the time for the performance of the operation judiciously chosen. Certain I am, that it would have been extremely difficult to perform any operation requiring steadiness or delicacy in its execution during the presence of such symptoms as were produced in this instance by the inhalation.

"It is clear that great judgment is required in the selection of cases, and that the inhalation of ether ought on no account to be practised by any but competent medical practitioners. The object for which it is employed is so desirable, that in all probability it will become general in the profession; but in order to be useful, *it must be safe*, and I trust the above narrative will prove, as it is intended to be, a warning against the indiscriminate employment of a powerful agent, which, in incompetent hands, or under unfavourable circumstances, is capable of producing very disagreeable if not *dangerous* effects."

83. *Injurious Effects of the Inhalation of Ether.* In a letter from Dr. PICKFORD.—Sir: Through the medium of the daily press, the public have been made acquainted with the powerful efficacy of the vapour of ether in annihilating suffering during surgical operations. The question of the possibility of any ill effects to the general health arising from so subtle an agent has not been mooted; and, with the

startling exception of an occasional coroner's inquest on the bodies of those who have died after operations performed during the state of insensibility consequent upon the use of ether, the public have neither read nor heard of any other than the most triumphant success of this new remedy. They have been taught to expect from its administration perfect immunity from pain and suffering of all kind, without fear of after consequences.

On this latter point, through the medium of the same channel, the columns of the daily press, I would undeceive the public mind.

We are told, that in the majority of cases, after inhaling the vapour for three or four minutes, a state of absolute unconsciousness, a corpse-like condition, is induced, during which the most severe and painful operations may be performed without the patient evincing the slightest evidence of sensation,—that the patient wakes, as it were, from a “pleasant dream,” and feels no inconvenience whatever from the inhalation. This is, I fear, the bright side of the picture; it is, at least, a proposition from which I dissent.

Let us inquire what is the condition of the pulse, of the respiration and countenance during the state of insensibility, and on what these conditions depend.

The circulation at first becomes rapid, then slow and feeble; the respiration, bearing a due relation to the frequency of the pulse, becomes laboured and stertorous, the countenance is livid, the lips and tongue are blue, the pupils are dilated, the muscles universally relaxed, the functions of the brain and nervous system are suspended, sensation is annihilated, and the patient, to all intents and purposes, for the time being, is a senseless corpse.

It has been said by M. Roux and others, that this state bears a close analogy to drunkenness; by Baron Flourens, that it resembles asphyxia, and by others it has been likened to apoplexy of the congestive form. These are fallacies which I am prepared to dispute. Etherization, as it has been termed, has nothing in common with drunkenness, with asphyxia, with apoplexy, save the state of insensibility; but it has something far more alarming and dangerous than any or all of these conditions taken severally or collectively.

As a general principle, it is acknowledged that no agent, be it what it may, which produces a sudden and violent effect, can be safely employed. In the particular cases before us we have to contend, not only with sudden and overwhelming effects, but, what is far more important, with a chemical and vital alteration in the constitution of the blood itself, of which the state of insensibility is but the natural consequence.

The change which the blood undergoes in respiration is almost entirely confined to the blood corpuscles. These, which represent in their independent act of metamorphosis the real vitality of the blood, and from which its fibrin is formed, indispensably require for their healthy change a due supply of oxygen. If this supply be lessened or altogether cut off, their metamorphosis is imperfectly effected, or entirely suspended, and the amount and plasticity of the fibrin are proportionably diminished or altogether arrested.

The blood, robbed by the ether of its oxygen, impoverished by the solution by the same agent of myriads of corpuscles, of those especially with which it comes into immediate contact, depreciated as a consequence in the quantity and deteriorated in the quality of its fibrin, intensely blackened by the solution of its corpuscles and their contained hæmatoglobulin, is chemically deprived, to a considerable extent, of its powers of coagulation, and rendered unfit for the purposes of life. A black vitiated blood circulates through the system, analogous, in many particulars, to that in putrid and malignant fevers.

This impaired condition of the blood is not even partially corrected until respiration of atmospheric air has been permitted for some considerable time, and until lymph corpuscles have found their way into the circulation to replace those of the blood destroyed by the ether. Many persons, especially those who are out of health or enfeebled by long previous disease, are hours, days, nay weeks, recovering from the state induced by the inhalation; many die from its direct effects,—from the want of oxygenized and vitalized blood to stimulate healthfully the brain and nervous system.

With a view to counteract some of the ill consequences of etherization, it has been proposed that the patient should inhale oxygen gas “as an antidote.” This,

of necessity, presupposes the exhibition of a poison. So that a patient about to undergo operation is to inhale a poison, be subjected to its deleterious effects, and then to swallow an antidote, as though the operation were not of itself sufficient, without all this extra complication of poison and antidotes, suspended animation, or actual death, proximate or remote.

But what are the facts? Etherized blood cannot be reddened by oxygen gas, simply because its black red colour is not dependent alone on a chemical change in the hæmatin. The ether has also dissolved the blood corpuscles, and thus permitted the escape of the contained hæmatoglobulin; and these it cannot restore. Had the blood been merely rendered artificially venous by the absorption of its oxygen, or by cutting off its ordinary supply, its arterial colour would be restored by agitating it with oxygen. In the following experiment, these facts are pretty clearly established.

In each of two vessels I caught eight and a half ounces, by weight, of arterial blood; both vessels were instantly plunged in water at a temperature of 98° Fahr.; the blood in one vessel was exposed for three minutes to the influence of the vapor of ether. The blood became of an intensely black red colour, whilst coagulation was, to a very considerable extent, interrupted. Subsequently oxygen gas was diffused through the etherized blood; but no restoration of colour could be produced. Placed in the field of a powerful microscope, numerous flocculi, the remains of the capsules of the corpuscles, were observed floating in the fluid portion of the blood, which was rich with these remains. At the expiration of 72 hours the blood in both vessels was weighed—that which had been subjected to the vapour of ether yielded *five and a half* ounces of black red fluid, and three ounces of a stringy clot, conclusive evidence of the small amount of fibrin. The fluid portion of the blood (serum) in the other vessel, in which neither flocculi nor corpuscles could be detected under the microscope, weighed half an ounce, the clot eight ounces.

This indisposition of the blood to coagulate after the inhalation of ether offers another very serious consideration. Fatal hemorrhages must occur, and do occur; and as the whole circulating fluid is deteriorated by the ether, is it matter of surprise that the lips of wounds evert, that the discharge is unhealthy, that stumps become flabby or gangrenous, and that patients sink and die?

Etherization, it is to be feared, exerts also a baneful influence directly upon the respiratory organs. A medical friend in Dublin informed me recently, that of thirty fatal cases following operations in which ether had been employed in the various hospitals of that city, eight were found to be the subjects of recent tubercles of the lungs, the undoubted product, it was believed, of inhalation.*

The endeavour to alleviate human suffering under one of the most trying of all situations, the knife of the surgeon, is highly praiseworthy, and the public must feel deeply indebted to those medical gentlemen who have devoted their time and talents in the attempt to achieve so desirable an end. It becomes us, however, to ascertain, so far as we are able, whether the means employed are compatible with the health and lives of those about to undergo operations.

Pain during operations is, in the majority of cases, even desirable; its prevention or annihilation is, for the most part, hazardous to the patient. In the lying-in chamber nothing is more true than this: pain is the mother's safety, its absence her destruction. Yet are there those bold enough to administer the vapour of ether even at this critical juncture, forgetting it has been ordered that "in sorrow shall she bring forth." I have the honour to be, sir, your obedient humble servant,

JAMES H. PICKFORD, M. D.

1 CAVENDISH PLACE, Brighton, 29th May, 1847.

Edinburgh Med. and Surg. Journal, July, 1847.

84. *Injurious Effects of Ether Inhalation.*—The Editor of the *Monthly Journal of Medical Sciences*, (number for April, 1847,) states, "that inconvenient effects have frequently resulted from the inhalation. Many of these will be found related by Professor Syme and Dr. Roberts, in our report of the meetings of the Medico-

* Mr. Macdonnell asserts (*Proc. Med. and Surg. Journ.*, July 14) that this statement is altogether groundless.

Chirurgical Society of Edinburgh. Great excitement, cough with expectoration of pus, hemoptysis, and convulsions, during the inhalation, have been witnessed by ourselves. In some cases, erotic feelings, and even nymphomania, have been occasioned in females, in others hysterical symptoms, or those of depression or intense headache, which have continued several days. In our last number we noticed the occasional occurrence of alarming sinking, which required vigorous measures to restore the individual. In some cases, the individuals have been thrown into such a state of agitation as to render the performance of the operation impossible.

Fatal effects have become multiplied. In our last number, one fatal case was noticed, occurring in the Edinburgh Royal Infirmary. We are informed that there are just now two other cases in which the ether was given, dying of secondary purulent deposits in the same institution.* Is this result the effect of ether? An answer in the affirmative cannot be decidedly given, but, as we previously stated, all such cases require to be put on record. M. Jobert has brought forward two cases in which he considered death to be partly dependent on the ether. M. Roux has given another of tetanus, in which the patient never rallied from the stupefaction, and where death was decidedly accelerated by it. Mr. Nunn, of Colchester, has recorded a case of lithotomy, which sank without the patient having rallied from the operation; and Dr. MacLagan has mentioned another, occurring in London after amputation of the thigh.

We observe in the Times, an account of an inquest at Grantham, in the County of Lincoln, in a case where an osteo-sarcomatous tumour was removed by Mr. Robbs, surgeon, under the influence of ether. The patient never rallied from the operation, which was in no way severe or prolonged, and the jury found "that the deceased, Ann Parkinson, died from the effects of the vapour of ether, inhaled by her for the purpose of alleviating pain during the removal of a tumour from her left thigh, and not from the effect of the operation, or from any other cause." In the correctness of this verdict the surgeon himself, Mr. Robbs, concurred.

85. *Ether Inhalation in Tetanus*.—Dr. W. H. RANKING, of Norwich, relates, in the *Prov. Med. and Surg. Journ.*, April 21st; a case of traumatic tetanus, in which he tried the ether inhalation, and with injurious effects. The first inhalation aggravated the spasm in a tenfold degree; the body of the patient became perfectly opisthotonic; foam issued from the mouth, and the man presented a most frightful spectacle. After allowing the effects to subside, it was again had recourse to, with a recurrence of the same symptoms.

In a case in which this remedy was tried in France, death was unquestionably hastened by it.

Two cases are also recorded, one by Dr. BRADY (*Dublin Medical Press*), and the other by Mr. BROUGHTON (*Prov. Med. Journ.*, May 5th), in both of which ether inhalation was tried, without at least averting a fatal result. Two cases are also recorded in which it is said to have cured the disease, the first by M. Petrusco (*Clinique de Marseilles*), is by no means satisfactory; the second, by Mr. Hawkesworth, is scarcely more so, having been reported in an English newspaper, from which it is copied into the *Prov. Med. and Surg. Journ.*, May 19th.

§ 4. Inhalation of Ether in Obstetrical Practice.

86. The applicability of ether vapour to Midwifery practice, is a question very difficult to decide from the many circumstances which must be taken into account. Dr. Ranking, in his Abstract, has well stated these difficulties.

"Many circumstances," he says, "conspire to render the application of ethereal vapour to the purpose of annihilating the pangs of childbirth the most interesting feature in the history of the discovery; but at the same time, from the number of points to be taken into consideration, in a process so complex as that of parturition, it is, of all the applications of the agent, that concerning which it is the most difficult to arrive at satisfactory conclusions. We have not to determine merely whether the inhalation of ether is capable of suppressing the pain which accompanies parturition, but we have to take note also of other conditions which com-

* One of these has since expired.

plicate the problem. The action of ether upon the fœtus, and upon the general economy of the mother; whether the insensibility which paralyzed the voluntary muscles would not likewise abolish the contractility of the uterus and abdominal muscles—were all so many novel questions which it was necessary to elucidate. It required, we think, no small courage to take the first step in solving a problem so important; a problem in which to err would not have been to commit a mere physiological blunder, but, in point of fact, to sacrifice the two lives, the preservation of which was confided to our care. It would be premature at the present time, to make any decided observations as to the general applicability of ether to midwifery.”

87. *Application of Ether to Obstetric Practice.*—Prof. SIMPSON, of Edinburgh, was, we believe, the first to test the application of ethereal inhalation to produce insensibility to the pangs of labour. In the *Monthly Journal of Medical Science*, for March last, he has published an account of some of his early trials, and the views he entertained relative to the use of this agent. In this paper he observes:—

“In obstetric as in surgical practice, the degree of insensibility produced by etherization, and its accompanying phenomena, differ much in different instances. In some, a state of total apathy and insensibility seems to be produced; others move about and complain more or less loudly during the uterine contractions, though afterwards, when restored to their state of common consciousness, they have no recollection of any suffering whatever, or, indeed, of anything that had occurred during the inhalation and action of the ether; others again, remain quite aware and conscious of what is going on around them, and watch the recurrence of the uterine contractions, but feel indifferent to their effects, and not in any degree distressed by their presence; and in another class again, the attendant suffering is merely more or less diminished and obtunded, without being perfectly cancelled and annulled.

“On the evening of the 13th inst., in two cases that rapidly followed each other, I witnessed, in the above respect, two very different conditions induced by the use of the ether. The patients (who each had borne several children previously) were both placed under the influence of it just as the os uteri became fully opened, and in neither did the full expulsion of the infant through the pelvic passages require above twelve or fifteen minutes. My first patient (the wife of a clergyman) subsequently stated, that she knew all that was said and done about her, was aware of the pains being present, but felt no distress from any of them till the superintention of the last strong contraction which drove the head out of the vulva, and the feeling then seemed to partake of the character of strong pressure, rather than of actual pain. Subsequently she told me, she could only look back with regret to the apparently unnecessary suffering she had endured in the birth of her former infants. The second patient, a lady of a timid temperament, and very apprehensive about the result of her present confinement, was induced with difficulty to inhale the ether vapour; but it speedily affected her when once she did begin. In two or three minutes she pushed the apparatus from her mouth, talked excitedly to a female relative present, but was immediately induced to recommence the inhalation; and subsequently, according to her own statement, ‘wakened out of a dream, and unexpectedly found her child born.’ Like many others, she thought hours instead of minutes had elapsed, from the commencement of the inhalation to the period of the complete restoration of consciousness. Making apparently an effort of memory, she afterwards inquired if she had not once awakened out of her dreamy state, and spoken some nonsense to her friend.

“A careful collection of cautious and accurate observations will no doubt be required, before the inhalation of sulphuric ether is adopted to any great extent in the practice of midwifery. It will be necessary to ascertain its precise effects, both upon the action of the uterus, and of the assistant abdominal muscles; its influence, if any, upon the child; whether it gives a tendency to hemorrhage or other complications; the contra-indications peculiar to its use; the most certain modes of exhibiting it; the length of time it may be employed, &c.* In no

* I have, during labour, kept patients under its influence for upwards of half an hour. In exhibiting it, the first, or exhilarating stage of its effects should be passed
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case have I observed any harm whatever to either mother or infant, follow upon its employment. And, on the other hand, I have the strongest assurance and conviction, that I have already seen no small amount of maternal suffering and agony saved by its application. The cases I have detailed sufficiently show its value and safety in cases of operative midwifery. And here, as in surgery, its utility is certainly not confined to the mere suspension and abrogation of conscious pain, great as, by itself, such a boon would doubtless be. But in modifying and obliterating the state of conscious pain, the nervous *shock* otherwise liable to be produced by such pain, particularly whenever it is extreme, and intensely waited for and endured, is saved to the constitution; and thus an escape gained from many evil consequences that are too apt to follow in its train. Granting that experience will yet be able to prove its safety and efficacy in modifying and annulling the pains of labour, will (I have repeatedly heard the question asked) the state of etherization ever come to be generally employed with the simple object of assuaging the pains of *natural* parturition? Or (as the problem has not unfrequently been put to me) would we be 'justified' in using it for such a purpose?

* * * * *

"Now, if experience betime goes fully to prove to us the safety with which ether may, under proper precautions and management, be employed in the course of parturition, then, looking to the facts of the case, and considering the actual amount of pain usually endured (as shown in the above descriptions of Merriman, Naegele, and others),* I believe that the question will require to be quite changed in its character. For, instead of determining in relation to it whether we shall be 'justified' in using this agent under the circumstances named, it will become, on the other hand, necessary to determine whether on any grounds, moral or medical, a professional man could deem himself 'justified' in withholding, and not using any such safe means (as we at present presuppose this to be), provided he had the power by it of assuaging the agonies of the last stage of natural labour, and thus counteracting what Velpeau describes as 'those piercing cries, that agitation so lively, those excessive efforts, those inexpressible agonies, and those pains apparently intolerable,'† which accompany the termination of natural parturition in the human mother."

This is a very favourable estimate of ether inhalation, but it must be borne in mind that it was derived from a limited experience, the paper bearing the date of February last; what are the present views of the author we do not know, as we have not seen any communication from him giving the results of his further experience, except the following:—

88. *Ether Inhalation in Midwifery Practice*.—Dr. SMITHSON has lately ascertained two important points with regard to the use of ether in midwifery. First, its action may be kept up for hours. In one case he had a patient placed for four, and in another for five hours and a half, under its influence before the child was born. When the patients awoke, about thirty or forty minutes after delivery, they were quite unconscious of the birth of their infants, and could scarcely at first be persuaded of the happy result. Both labours had been previously exceedingly tedious. One of the patients had the child's head arrested at the brim, and after being above thirty-six hours in labour, was delivered by Dr. S. with the long forceps. Second, the fœtus in utero seems not to be deleteriously affected by even such prolonged etherization of the mother. In these two cases the action of the fetal heart was carefully watched by Dr. S. with the stethoscope, and did not vary above

through as rapidly as possible, and the patient never allowed to be excited or irritated by the nurse or others. I have heard its use strenuously denounced on the ground that its effects, though good, are still of an intoxicating character. But on the same ground, the use of opium, &c. &c., in medicine, to relieve pain, and procure sleep, should be equally reprobated and discarded.

* Dr. Rigby, in his *System of Midwifery*, p. 103, observes, "This is the moment of greatest pain, and the patient is quite wild and frantic with suffering; it approaches to a species of insanity," &c.

† *Traité des Accouchemens*, vol. i. p. 449. "Ces cris perçans, cette agitation si vive, ces efforts excessifs, ces angoisses inexprimables, ces douleurs qui paraissent intolérables," &c.

ten or fifteen beats during the whole time of the etherization. Both children were born alive and well.—*Monthly Journ. Med. Sci.*, April 1847.

89. *Inhalation of Ether in Midwifery Practice.*—BARON PAUL DUBOIS read to the Academy of Medicine, of Paris, on the 23d of February last, a very interesting memoir on the "Inhalation of ether applied to cases of midwifery." The following are the conclusions which his observations justify him, he says, to draw, and his well known circumspection and good judgment invest these deductions with great authority.

"1st. That the inhalation of ether has the power of preventing pain during obstetric operations.

"2d. That it may also momentarily suspend the natural pains of labour.

"3d. That the state of ebriety induced by the inhalation of ether, does not suspend uterine contraction when the latter is decidedly set in and takes place at short intervals; and that it does not impede the synergetic action of the abdominal muscles.

"4th. That the state of ebriety appears to lessen the natural resistance which the perineal muscles oppose to the expulsion of the head.

"5th. That the inhalation of ether has not appeared to exert any bad influence over the life or health of the child.

"Now, after hearing the foregoing conclusions, it may appear natural to suppose that the inhalation of ether being a process to which so many advantages are inherent, it might hence be considered as a precious expedient, and be frequently resorted to by the obstetric art. Such, however, is not my opinion. The very proposal of such a thing, having no other ground but the very few facts I have communicated to the Academy, would not only appear very bold, but should be considered as extremely imprudent. In beginning this communication I related the apprehension under which I laboured at first. Well, the cases I have brought before the Academy may have lessened my fears, but have not yet altogether erased them from my mind.

"You will remember that one of the women who inhaled ether went into a state bordering on that we design under the name of epileptiform. Two other women have died. Now, although the morbid occurrences in the first cases were but of a short duration—although the fatal result in the two other cases rose far more probably from the influence of the epidemic than from any other cause—the Academy must feel that, in a question of so serious a nature, the recollection of these facts must still leave on my mind impressions of doubt and timidity. Later, perhaps, these hesitations may disappear; but even then I shall not forbear thinking that the very nature of things will tend to render very uncommon the adhibition of ether in cases of midwifery. First of all, it is evident that inhalation of ether can never produce a painless labour from beginning to end; it is to be doubted whether insensibility could be made to last long enough for such a result; and it is more doubtful still whether such a thing could be tried without running positive danger, and without being liable to the charge of guilty temerity. Therefore, there only remains for employing ether but the last period of labour, as in the cases where I have used it; and even then, this last period where its adhibition has appeared the most effectual, is the one, according to all mothers, the least fatiguing, the least painful of the whole labour.

"As to the use of ether during obstetric operations, I will only observe that these operations are often rendered necessary by unforeseen circumstances, and that when it thus happens, they are of a very urgent nature. It is not necessary to give further development to the proposition I lay down here, in order to show that in a great number of these cases inhalation of ether cannot be resorted to. As to the remaining cases, it may be asked whether they prove to be generally of such a painful nature as to justify the common use of a process, which even, in conditions unconnected with the puerperal state, is not free from disadvantages, and which, when used under those special conditions, seems to me still less free from the same charge. My profound feeling on the subject is, that inhalation of ether in midwifery should be restrained to a very limited number of cases, the nature of which ulterior experience will better allow us to determine."—*Lancet*, March 6th, 1847.

90. *On the Employment of Ethereal Inhalation in Midwifery.* By Prof. SIEBOLD.—At a meeting of the Royal Scientific Association of Göttingen, held on the 8th of May, 1847, a paper was read by Professor Siebold, “On the Employment of the Vapour of Sulphuric Ether in Midwifery,” of which the following is an abstract:—

The principal questions which had occupied the author’s attention in the investigation of this subject, were—

1st. Whether this new remedy may be employed in natural cases of labour, for the purpose of preventing the severe pains attendant on the latter part of the process of delivery, or

2dly. Whether the use of it is to be limited to cases of operative midwifery.

It must be remarked, in the first place, that, when labour pains are of long continuance, it may be regarded only as common prudence to mitigate or remove those pains which are strongest and most violent—those, namely, which by the schools are called “*dolores conquassantes*,” and under the influence of which the child’s head is pressed through the external genital parts, and is then followed by the trunk. The important moment, then, in which the employment of ether should be resorted to, provided its use in a natural case of labour be decided upon, is that in which the head lies immediately behind the external parts of generation, or has already progressed so far outwards that it becomes evident that at the next pain it will be born.

But, in judging of the admissibility of this new remedy in natural cases of labour in general, the nature of the pains attendant on the process must be especially taken into consideration. These pains are natural phenomena, produced by contraction of the uterus for the purpose of expelling the child. They are endured, therefore, without any detriment, and, even the most severe ones, disappear at once, as if by a charm, directly the child is born. This cannot be said, however, of those pains which are produced by the knife of the surgeon: they, of course, are unpleasant additions to the looked-for effects of an operation, and do not lead, like labour-pains, to a certain desirable result. Unlike labour pains, also, they are, from their first occurrence, of the utmost severity, and are therefore not rendered tolerable to the system, as the former are, by a gradual increase in their severity: they are surgical pains, brought into existence by the hand; whilst labour-pains appear to be intimately connected with the whole process of the wonderful act of parturition, and may, therefore, in contra-distinction to surgical pains, be called *physical* pains.

There is, however, a second kind of pains to which parturient women are subject: these are inflicted from without, and have nothing in common with the real process of labour, but are produced by the hand or instrument of the midwife in cases where an operation is necessary. As the surgeon, so also does the operating midwife, produce pain; and, indeed the parturient woman then suffers doubly, for the ordinary labour-pains continue, and to these are added the sufferings resulting from the operation. The consequences of this often manifest themselves for a considerable time afterwards, and much suffering is thus entailed, in consequence of the great pain inflicted during the operation. For this reason, therefore, must a remedy which promises to relieve or entirely remove these pains, be welcomed in operative midwifery; and even if theory cannot unconditionally speak in favour of the employment of ether in cases of natural labour, yet this offers no tenable argument against the use of this remedy in those cases of labour requiring an operation, providing the employment of it is not attended with any ill effects which would interfere with the performance or the object of the operation.

Several points on this subject require experience for their elucidation—such as whether the female organism can endure without detriment the employment of ether during labour,—whether the efficiency of the pains will not be interfered with,—and, lastly, whether the child suffers any harm. With the view of procuring information on these points, the author has instituted a number of experiments in the Lying-in-Hospital under his charge, and, in his present essay, communicates the results to the Society.

He experimented, in the first place, on healthy non-pregnant women, in order to ascertain the effect of this remedy on the female system. In all the subjects, the effects of ether vapour were duly manifested, sensation and consciousness being more or less suspended. The description of the sensations perceived by

the patients certainly varied; yet they all agreed in their relation of the pleasant and agreeable condition in which they found themselves. In each individual, the same phenomena which were observed the first time were perceived in each subsequent repetition of etherization. In this, the action of ether resembles the effects of intoxication from spirituous liquors.

Experiments were then performed on pregnant women; and during these, attention was especially directed to the effects produced on the child in the uterus. As unconsciousness began to appear, the child seemed uneasy; for its movements increased; but it became quiet again when the stupor of the parent was complete. The action of the child's heart, however, was found to continue quite unaltered, not the slightest change in its frequency and regularity being detected.

After this, the remedy was tried in eight cases of labour. In all of them a greater or less degree of unconsciousness was produced by it; but, with the occurrence of the narcotism, the labour-pains at once ceased, even in cases where but a short time before they had been of the strongest kind. In some the pains returned only with returning consciousness; but in others they were re-excited, during the continuance of the narcotism, by friction over the abdomen. Signs of pain were indeed manifested during the expulsion of the child; yet afterwards there was either no remembrance at all of them, or only a very slight one. No injury was observed to result either to mother or child; for although one child was born in a state of death-like stupor, yet this was not the fault of the ether, for the umbilical cord was found firmly twisted around its neck.

Although the results of the employment of this new remedy in natural cases of labour was therefore not very satisfactory, yet the advantages afforded by it in those cases which required an operation were very manifest. The first case of this kind in which the remedy was tried, was that of a young primipara, in whom extraction of the child by the feet was rendered necessary. The pains endured by this patient were very sincere: she tossed about the bed, screamed aloud, and, by the continual movements of her whole body, rendered even an ordinary examination difficult. But, when brought under the influence of the vapour of ether, she speedily fell into a state of unconsciousness, during which the extraction of the child was effected with ease. She remained perfectly quiet, and a few groans during the operation were the only manifestations of pain which she evinced. Through the irritation which the extraction of the child excited in the uterus, this organ was thrown into contraction, and thus aided the operation. The child made the necessary turns, the arms appeared of themselves, and the head shortly afterwards was born. In about two minutes after the birth of a living child, the woman roused up: she appeared astonished; and, on seeing her child, exclaimed—"Oh, it is all over!"—without this I could not have endured it." When further questioned, she said she felt as if in a dream, and fancied she was in her native place, and strolling among trees in blossom. She had no recollection of pain. The case progressed favourably, and terminated well.

Equally successful were the results of two forceps-operations performed while the patients were under the influence of ether. In both cases, indeed, the commencement of unconsciousness was accompanied by cessation of the labour-pains, but in each they were re-excited by the introduction and use of the instruments, and thus aided the operation. The application of the forceps was in both cases unaccompanied by pain, and it was only during traction that any signs of suffering were manifested. When roused from their stupor, the patients possessed no recollection of what had happened to them, and expressed amazement at their labour being over. The children, in both instances, lived. It is deserving of especial notice, that in both the operations, the parts of generation, the vagina and os uteri, were rendered so soft and lax by the narcotism, that the introduction of the blades of the forceps could be effected with the greatest ease. In neither case did any evil consequences result: in one of them, indeed, such effective pains ensued shortly after delivery, that the placenta was spontaneously expelled. The softness and relaxation of parts in these cases lead to the suggestion that in those cases in which strong contraction of the uterus offers considerable difficulty in the performance of a requisite operation—as in cases of turning, or of incarcerated placenta—the vapour of ether may render very efficient service.

If from the above observations it be permitted to come to a decision in regard

to the use of this new remedy, and to answer the two questions stated at the outset, one might, in the first place, give expression to the opinion of the author by saying that this remedy will find no particular favour in cases of natural labour. For, suspension of labour-pains, or cessation of uterine contraction, is the usual consequence of the employment of the remedy, and the natural process of labour will, therefore, obviously, be interrupted by it. It is even possible that through the cessation of the efforts of uterine contraction, the occurrence of hemorrhage will be induced, and thus a troublesome and dangerous addition be made to the more ordinary risks of labour. The employment of ethereal vapour in natural labour will, therefore, probably be limited to those cases in which pains of remarkable severity occur.

There is yet one other remark to be made, supposing it be determined to use the vapour of ether in cases of natural labour:—may this remedy be placed in the hands of midwives?—the law has already given the proper answer to this question in the case of inferior surgeons and dentists; it has prohibited these from the employment of this remedy except with the concurrence of a physician. Yet the subject is of still higher importance in regard to midwives, but no enactment of a like nature has yet appeared to regulate the employment of this remedy in this its hitherto almost unknown, and but little practised application.

In answer to the second question stated at the commencement, it may be said that the true use of the vapour of ether in midwifery is limited to cases requiring operation; experience from all sides has spoken in favour of its employment in such cases. Here we have to deal with pains which are inflicted from without, and the removal of which, by the use of ether, is a great gain; and that they may be removed experience has shown: it has shown also that neither the mother nor the child is any the worse from the employment of this remedy; but, on the contrary, that the operation is rendered easier of performance by the softening and relaxation of the parts which are induced. The fear lest contractions of the uterus should entirely cease is also groundless, for the irritation which is excited in the uterus by the operation is sufficient to cause a renewal of its action. The temporary interruption of the contractions is, indeed, of considerable service to the operator; for the operation of turning is often rendered very difficult by these contractions, since, the liquor amnii having escaped, the uterus is firmly clasped around the child, and thus considerable obstruction is offered to the passage of the hand to the child's feet. But in such cases much is to be hoped for from the use of ether; and an operation which, under ordinary conditions, is difficult, will be thereby much facilitated. Like good effects will probably also result from the use of this remedy in cases when the placenta is retained after the birth of the child; but for the determination of this, experience is required. It may be necessary, however, to mention that this remedy must be employed with great caution, and with due regard to all contra-indications; among which should be included a diseased state of the lungs, and a plethoric condition of the system, which latter might be apt to lead to apoplexy. Moreover the remedy should not be employed in cases where there is a tendency to hemorrhage, and in which such tendency has manifested itself in previous labours; for by the use of it, the best guard against hemorrhage, namely, uterine contraction, is withdrawn; and, indeed, we require further observation to show us whether even a more serious kind of hemorrhage may not be induced by the inhalation of ethereal vapour.* All this shows that further observations are required before a right judgment can be formed regarding the circumstances under which this remedy may be employed even in cases of operative midwifery.

With regard to the observations which have been offered by others on this subject, the chief ones are noticed by the author: among others, those of Dr. Simpson, (the first who employed this remedy in a case of midwifery requiring operation,) of the German physician, Dr. Hammer, of Mannheim, and of the French physicians, Paul Dubois and Bouvier.—*Lond. Med. Gaz.*, June 1847.

* [The tendency which etherealized blood manifests to remain fluid after death renders it probable that the above-expressed fear will be found to be far from groundless.]

91. *Influence of Ethereal Inhalation on the Uterine Contractions.*—Notwithstanding the remarkable results obtained by MM. Paul Dubois, and Simpson, one important point with regard to the exhibition of ethereal inhalation in obstetrics has not yet been set at rest, viz.:—has ether the effect, as supposed by M. Velpeau, of suspending or diminishing the power of the uterine contractions so far as to facilitate certain obstetrical operations, such as the version of the fœtus. The following fact will further confirm the experience which we have already acquired, viz., that etherization neither suspends nor diminishes the resistance offered by the uterus to the introduction of the hand, and therefore does not facilitate version.

M. STOLTZ, of Strasbourg, was called to a primipara, æt. 24, of strong constitution, and in the sixth month of pregnancy. She received a fall on the first of March, and after suffering somewhat from pain in the abdomen and sacral region, she was taken in labour on the 5th of the same month. On examination, M. S. found the right foot and right arm at the uterine orifice: from the shape of the uterus, it was concluded that the fœtal head was to the left and inferior portion of the uterus, and the pelvic extremity to the right and upper side. The absence of a battlement showed the fœtus to be dead. M. S. determined to deliver by turning; the patient was placed in the required position, and ether exhibited with the usual results. Seeing that sensibility had almost entirely ceased, M. S. attempted the introduction of his hand into the vagina, when the woman immediately awakened up, and resisted him with loud cries; he then desisted for two or three minutes, until insensibility was complete. From that moment he was enabled to introduce his hand into the vagina, and accomplish the necessary operation without the patient at all resisting him, or complaining, although the passage of his hand through the vulva was not effected with greater ease than is usual in primiparae. Having seized the foot which presented at the os uteri, M. S. attempted to extract the fœtus, but so powerful were the uterine contractions, that the thighs could not be disengaged. Having applied a noose upon the right foot, M. S. then introduced his hand again in order to seize the other foot still in the uterus; he had at first great difficulty in passing his hand through the os uteri, and even after having succeeded in this, he was unable, in consequence of the violence of the uterine contractions, to penetrate far enough into the uterus to reach the left foot; he found himself compelled to desist from this attempt, and at length with great difficulty succeeded in extracting the body of the fœtus from the uterus, but the os uteri still contracted so powerfully round the neck of the fœtus, that he could not proceed with the extraction. During the whole of this time the ethereal inhalation had been continued, and the patient had remained in a state of complete and uninterrupted repose and insensibility. The patient at length showed an inclination to vomit, and without much effort ejected a large quantity of frothy mucus; about a minute thereafter she woke up, and said she had dreamed that some one had attempted to deliver her, and had thereby caused her pain; she gradually recovered, and complained only of a slight uneasiness in the head and throat. The head of the fœtus remained all this time encircled by the os uteri: in about an hour uterine contractions were renewed, and a few slight extracting efforts sufficed to complete the birth of the fœtus.—*Monthly Journal of Med. Sciences*, July 1847, from *Gaz. Méd. de Strasbourg*, March 1847.

92. Dr. TYLER SMITH, in an interesting paper published in the *Lancet* (March 27th), investigates the action of ether in connection with the physiology of parturition. He points out the different parts taken in that process by sensation, volition, and emotion, and from this examines the applicability of ether to labour.

"What benefits can be conferred, what injuries hazarded, by the use of ether?" he asks, and then says, "pain and emotion may be obliterated: all, or nearly all, of shock which belongs to pain and mental emotion may be averted; but, at the same time, volition, and the salutary influence exerted by pain and emotion on the motor actions of labour, are withdrawn. In successful cases—that is, when the brain only was affected—parturition, as a reflex function, would not be interfered with. There remains to the woman, in its full intensity, all that portion of shock which depends on the spinal marrow and the ganglionic system. There are added, in some cases, the increased tendency to puerperal convulsions, and the collapse

described in the cases of Messrs. Nunn and Robbs as the effects of the ether itself, and which has also occurred in many unrecorded cases. The dangers, incurred by the use of ether in midwifery, would be that of convulsion, and of the meeting of the physical shock of parturition with the shock or collapse produced by the ether itself. Whenever this complication occurred, there would be considerable danger. Briefly, I may repeat, there is, on the one hand, the absence of pain and of painful emotions, with their attendant evils; on the other, there is the physical shock unaverted, the tendency to convulsion, and the possibility of dangerous collapse—a possibility which, in some surgical cases, has passed into fatal certainty."

§ 5. *Present State of Opinion in regard to the use of Inhalation of Ether.*

93. It will, we think, be interesting to our readers to learn the present state of opinion in regard to the employment of inhalation of ether, and we have, accordingly, endeavoured to collect it, and to represent it fairly. We think this has not yet been done, and it is interesting, not only in a historical point of view, but may be important in contributing to aid the reader in forming his own opinion on the subject.

Dr. RANKING, in his Half-Yearly Abstract, remarks:—"The introduction of the inhalation of ether, for the purpose of annihilating pain in surgical operations, and of depriving even the dreaded process of parturition of its pangs, has not been exempted from the ordinary fate of novel propositions in medicine, although it must be allowed that the objectors to the value of this agent form the minority of those who have been led to reflect upon its applicability. Still there have not been wanting, in every locality, some over-cautious or over-timid persons, who are haunted with the idea of the danger which must attach to means so extraordinary, and who look upon an ether inhaler as almost a synonym for apoplexy or asphyxia. These individuals, however, as we have said, are few in number, and their opinions are, therefore, of little consequence as respects the estimation of the agent; the real danger to which it is exposed arises from the precipitate encomiums of its friends, and the reckless manner in which it appears to be made use of, without reference to, and by persons utterly incapable of judging of, the normal or diseased physical peculiarities of the patient."

Mr. JOHN F. SOUTH, in a postscript to his edition of *Chelius's Surgery*, observes: "The avidity with which ethereal inhalation has been generally adopted, and apparently without consideration of the possibility of its indiscriminate employment being ever attended with danger, is one of the most remarkable circumstances connected with it. But, that it is not unfrequently accompanied with inconvenient and even dangerous results there can be no doubt."

He relates some cases in which injurious effects were produced, and then remarks:—"I have thought it right to mention these facts, to put practitioners on their guard in the employment of ethereal inhalation, for I feel assured, that unless more cautiously employed than hitherto, it will not be long before many disastrous consequences will result. A medical friend of high standing, with whom I had some conversation, insisted on the propriety of subjecting the patient to some preliminary trials of the effect of the inhalation before employing it at the time of operating. With this opinion I fully concur, and I should certainly adopt it, if I made up my mind to try inhalation at all; but upon that point I am not decided, for I have considerable doubt of the propriety of putting a patient into so unnatural a condition as results from inhaling ether, which seems scarcely different from severe intoxication, a state in which no surgeon would be desirous of having a patient who was about to be submitted to a serious operation."

"It was suggested, with much appearance of probability, that a far more important benefit than even the prevention of pain would arise from the use of ether; that it must lessen the shock to the nervous system generally, and that the after-treatment would be greatly facilitated by the absence of constitutional irritation. But experience has not confirmed these hopes. A patient who recently underwent an important operation, which was performed with rapidity and skill while he was quite unconscious, gradually sank, and died in three weeks, although little blood had been lost, and there was no organic disease found after death to account

for the unfavourable termination of the case; there were two fresh effusions of blood beneath the arachnoid membrane. Another case, still more recent, terminated fatally within three days; the patient never rallied from the sedative effects of the ether, while, at the same time, the spasms in the stump of the amputated limb were unusually severe.

"In conclusion, I may observe that there are no operations in which the use of ether seems to be so decidedly *contra-indicated*, as in those for the cure of cataract; for, when skillfully performed, they cause hardly any pain, so that stupefying the patient is at least superfluous. But voluntarily to induce congestion in an organ, where inflammation, once set up, is so difficult to control, and where, if unchecked, it produces such deplorable effects, appears to be the height of imprudence. Yet all this risk has been run, and the non-professional public have been astonished to hear how quickly a cataract may be got out; the final results of the operations have not been so eagerly proclaimed."

Mr. BRAITHWAITE, in his Retrospect for January—June, last, states: "It is possible that when we are better acquainted with the kind of cases in which this agent may be safely used, that it may prove a valuable addition to operative surgery, and even in many medical cases; but at present we are strongly disposed to think that its value has been vastly over-rated. We know many eminent hospital surgeons who feel little disposed to rely upon it in future, and who assert that if they had occasion to submit their own persons to a surgical operation, they should prefer the endurance of the pain to the risk of the ether. In short, surgeons are not yet masters of the subject. It requires further investigation, and the cases more minute classification."

"At present, we find many objections, attributable perhaps to our ignorance of its minute effects, and the cases exactly fitted for it. Some of these objections we find excellently worded by the learned editor of the Medical Gazette.

"In the first place, it is impossible beforehand to fix the dose of vapour that will be required to produce given effects upon any patient. Then it is not always easy to ascertain when enough has been administered: we cannot rely on the state of the pupil, or the pulse,—perhaps the change in the breathing is a more certain sign.

"Again, we cannot predicate the form which the intoxication may assume,—whether that of coma, or excitement; the latter state would be an evil in the performance of any operation;—and in some,—hernia and lithotomy, for instance, a sudden movement of the patient might endanger his life.

"Unconsciousness of suffering is not always desirable, for we sometimes wish to know if nervous cords are unnecessarily touched.

"And besides all this, very serious consequences have already resulted from its use: an affection of the nervous system approaching apoplexy,—syncope,—dyspnoea,—and spitting of blood. Death also has followed its use in many instances; in some of which, as that of Mr. Nunn, in this country, and the two cases of M. Jobert, in France, the fatal issue has been attributed to the use of ether. It is probable that if the deaths were faithfully recorded, we should find that in many more instances, they were not from ordinary causes."

Again he observes: "There is no doubt that there have been numerous other cases of a very unpleasant, if not of a positively dangerous character, from the use of this remedy, which have never met the public eye.

"After careful observation, therefore, we cannot but think that the favourable impression on the minds of the profession, and of the public, has been produced, to say the least, prematurely, and without sufficient evidence and proper discrimination of the cases and constitutions subjected to its influence. And we will further state that it is the impression among many experienced men, that in a very short time, it will be but seldom used, if it do not fall completely into disrepute."

At a meeting of the *South London Medical Society*, April 15th, Dr. GULL read a paper on the effects of ether on the different classes of animals, and concluded with queries whether it was useful to abolish pain during surgical operation, whether this can be safely done by ether, and whether the presence of ether in the

blood modifies the healing process. This paper elicited the following opinions from Mr. Travers and Mr. B. Cooper.

Mr. B. Travers, Jr., remarked, that the proximate as well as immediate effects should not be overlooked, as he believed the effects of ether were progressive, and that a man having been under its influence might die in the course of five days as well as of twenty-four hours. He had known a limb five days after death smell strongly of the ether, the stump having become gangrenous. He believed it to be a poisonous and dangerous remedy, attended with the greatest risk, and requiring the most profound caution in its use.

Mr. Bransby Cooper, in reference to Dr. Gull's question "whether it was right in operations to alleviate or prevent pain, provided it could be done with perfect safety?" remarked, that pain was a premonitory condition, no doubt fitting parts the subject of lesions to reparatory action, and therefore he should feel averse to the prevention of it. In parts operated upon under the influence of ether, there was no muscular contraction, no retraction of the larger vessels, and the small ones continued bleeding; he alluded to a case of lithotomy under the influence of ether. The operating surgeon remarked that, with the exception of the flow of blood, it was like cutting through dead flesh; the parts fell, as it were, asunder, and the sensations were quite different on passing the finger into the bladder. Dr. Gull's paper had more than ever convinced him that it was a poison, and unless other experiments proved it harmless, he should give his decided opinion against its use.—*Lond. Med. Gaz.*, April 2, 1847.

The editor of the *Medico-Chirurgical Review*, April, 1847, after speaking of the enthusiasm which existed with regard to the inhalation of ether, both in the public and profession, observes:—"Excusable as this is in a matter of such momentous interest, we fear it has led to a too indiscriminate adoption and a too exaggerated estimate of the value of the remedy, and has certainly given rise to practices which are highly derogatory to professional dignity. The theatres of our hospitals have been made the scenes of operative display before crowds of 'fashionables, lords, princes, distinguished foreigners,' and the like, and the proceedings within their walls chronicled in the columns of the daily press with all the fact, exaggeration, and conventional phraseology of the penny-a-liners; who, we sincerely hope, will not be allowed to convert the *entrée* so injudiciously granted them upon the present occasion, into a precedent."

The editor of the *Monthly Journal of the Medical Sciences*, in his number for April last, remarks, "Since we last noticed this subject, although the inhalation of ether has been practised to a great extent, much of the enthusiasm which at first prevailed respecting it has been dissipated. The occasional unpleasant, and in a few instances even fatal effects which have resulted from its use, have caused a salutary check to the extravagant anticipations which were formed with regard to it. Further experience only can enable us to form correct notions of those circumstances which may render its application warrantable. In the mean time it is our intention to give a short summary of the novel facts which have been elicited in connection with etherization during the past month."

He further states that he is informed that Prof. Syme has abandoned the use of ether in his surgical clinic.

The editor of the *Dublin Quarterly Journal of Medical Sciences*, in his number for May last, states, "We regret to say, that our fears with respect to the general employment of this agent, contained in our last number, have, in several instances, been verified. Several deaths, caused either directly or hastened by the inhalation of the vapour of sulphuric ether, have lately been recorded, and the journals that were at first loudest in its praise have recently assumed a very cautious tone on the subject."

It is proper, before closing this article, to state, that in Boston, where the practice of exhibiting ether originated, it has been administered in a large number of cases, and is now habitually employed by several very distinguished surgeons and obstetricians, whose confidence in its efficacy and safety, we learn, continues up to the present moment unabated.